

Preparation and adsorption properties of cellulose aerogel materials

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Abstract

With the wanton discharge of industrial wastewater, mining wastewater, urban domestic sewage, etc., it has caused water pollution in China. For a long time, the adsorption method has the advantages of wide application range, good treatment effect and reusability in wastewater treatment. Cellulose is currently the world's largest reserves, environmentally friendly materials that can be degraded and recycled. Aerogel has a unique three-dimensional network porous structure, which has the advantages of high specific surface area, high porosity, and low density. On this basis, it is easy to modify, regenerate, and has good stability. It is ideal for adsorption material. This article uses microcrystalline cellulose (MCC) and hydroxyethyl cellulose (HEC) as raw materials, and uses low temperature alkaline environment to dissolve. By controlling the amount of MCC and HEC, the optimal ratio of MCC and HEC is found, and then Hydrophobic modification, and then prepared by freeze-drying means (or CO₂ supercritical drying means) to obtain MCC/HEC composite aerogel. A variety of modern analysis methods such as XRD, FT-IR, SEM, etc. were used to characterize the structure of the obtained cellulose-based composite aerogel material and explore its adsorption performance.

Keywords: cellulose; aerogel; modification; adsorption

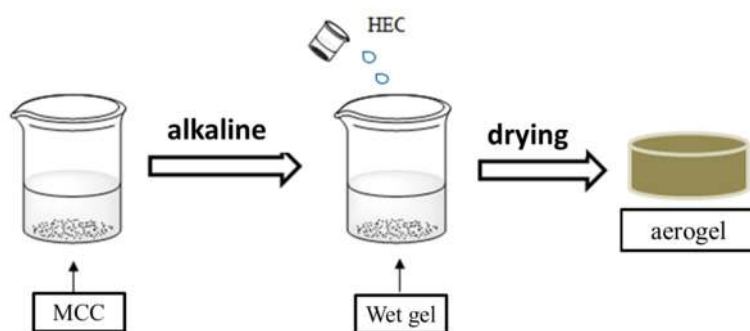


Fig.1 Schematic illustration of the composite aerogel

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